Magnum 518

Service Manual

SPECIFICATIONS

Speaker Impedance: 8 ohm

Antenna:

AM, Built-in ferrite bar

FM, 75 ohm unbalanced, ext. terminal

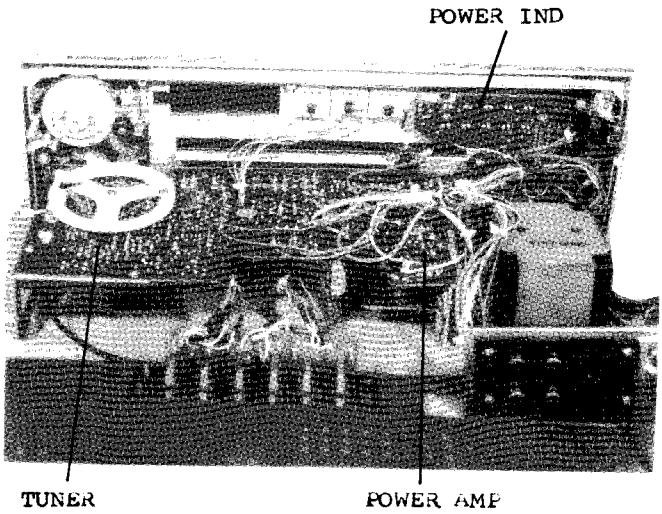
AM SECTION

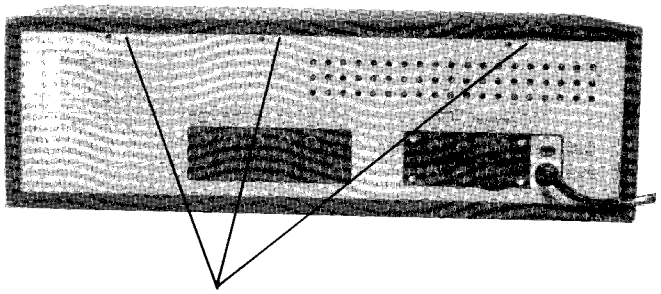
Frequency range	: 535 kHz – 1605 kHz
Usable Sensitivity	: 400 μ V
Image Rejection	: 35 dB

FM SECTION

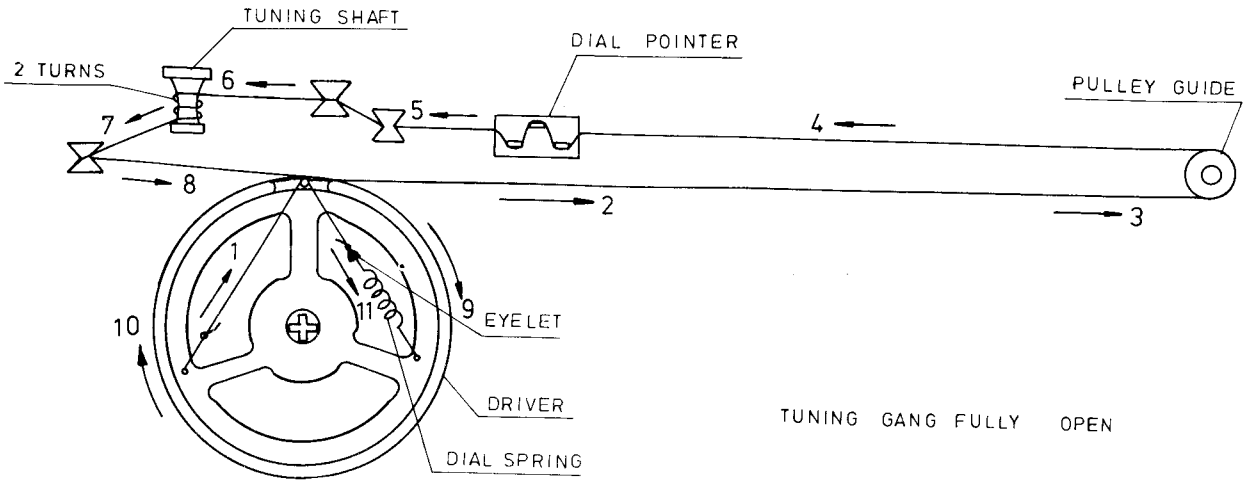
Frequency range	: 88 MHz – 108 MHz
Usable Sensitivity	: 10μV
Image Rejection	: 28 dB
Separation	: 30 dB

PARTS LOCATION

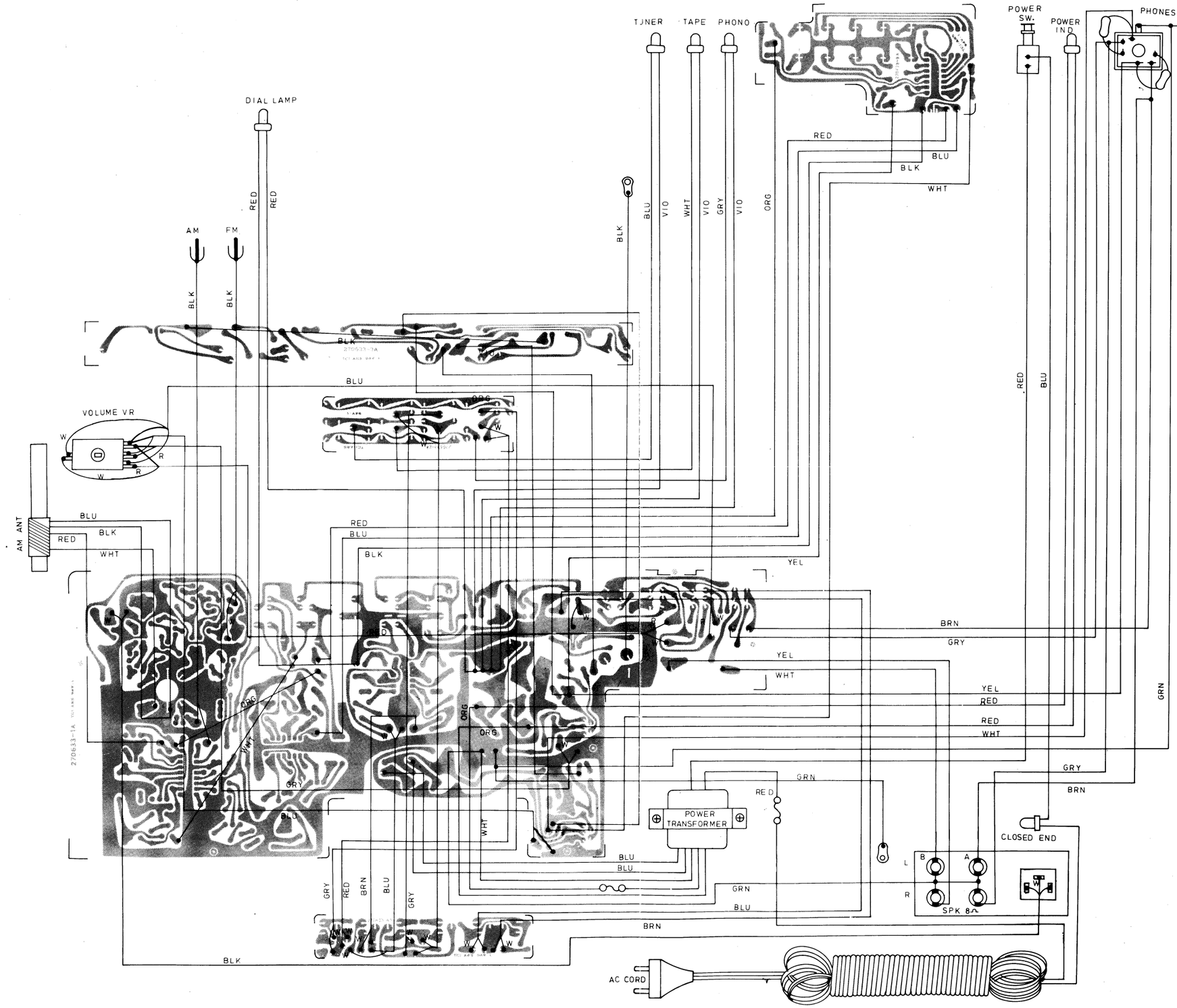




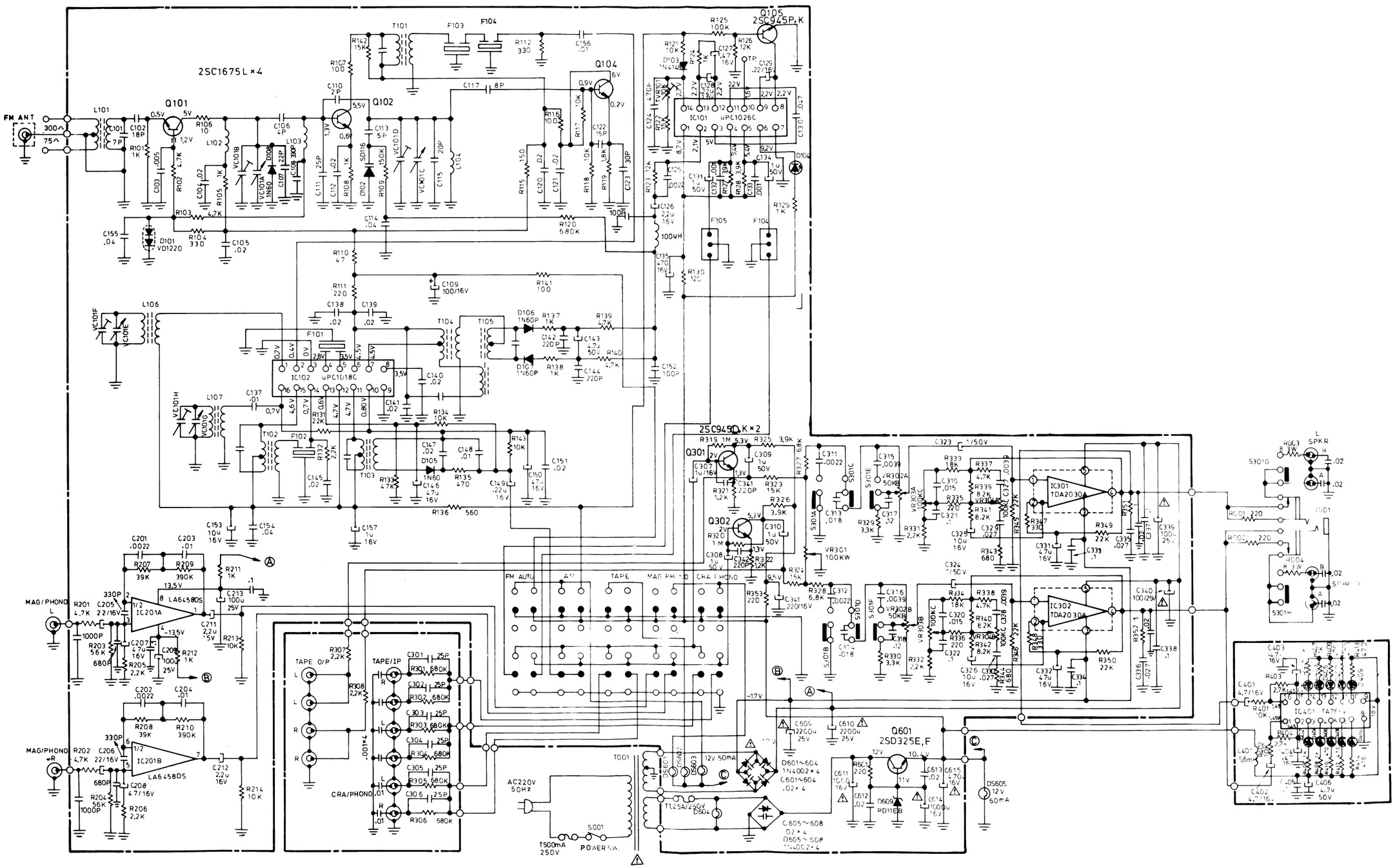
DIAL STRINGING



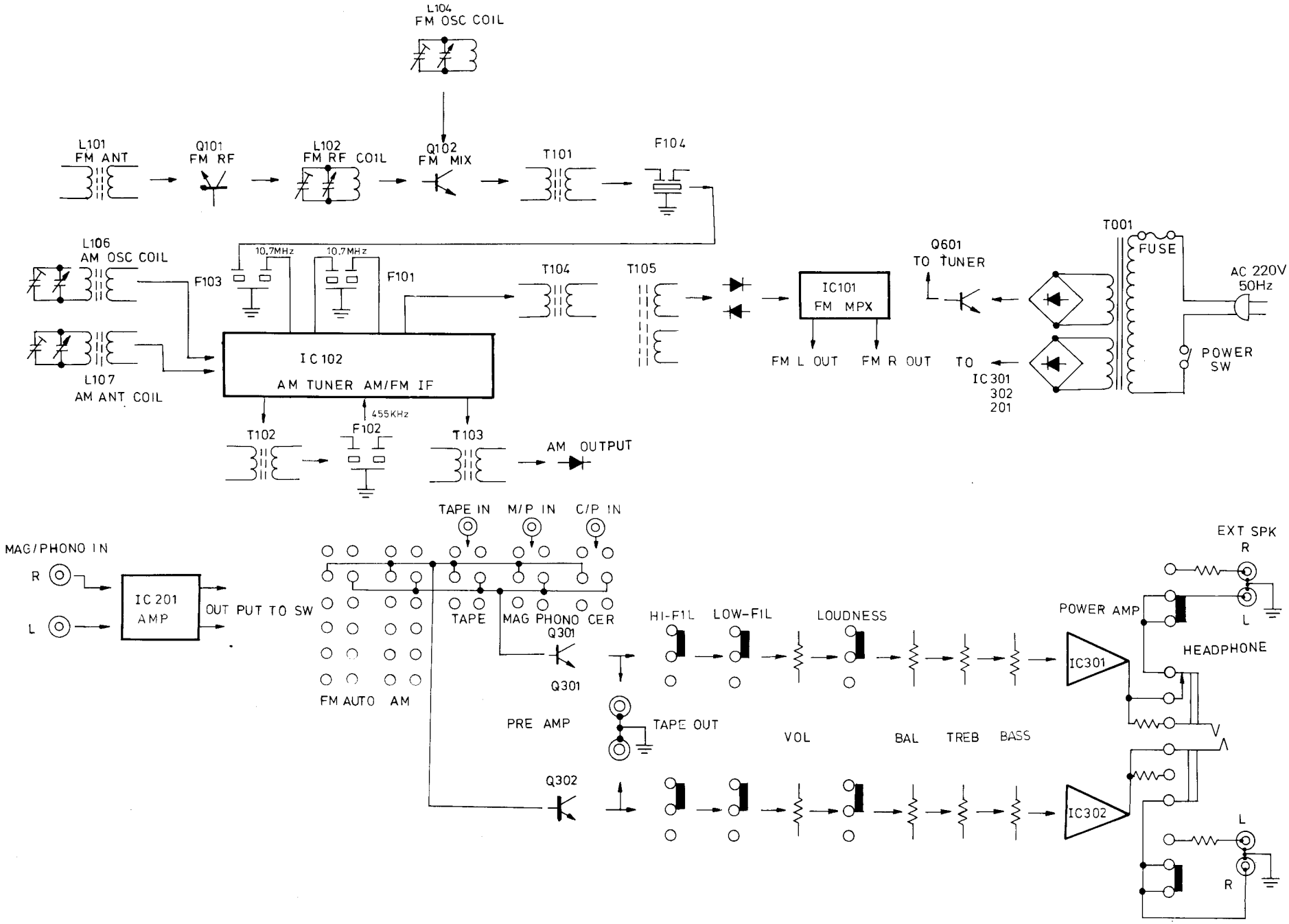
WIRING DIAGRAM



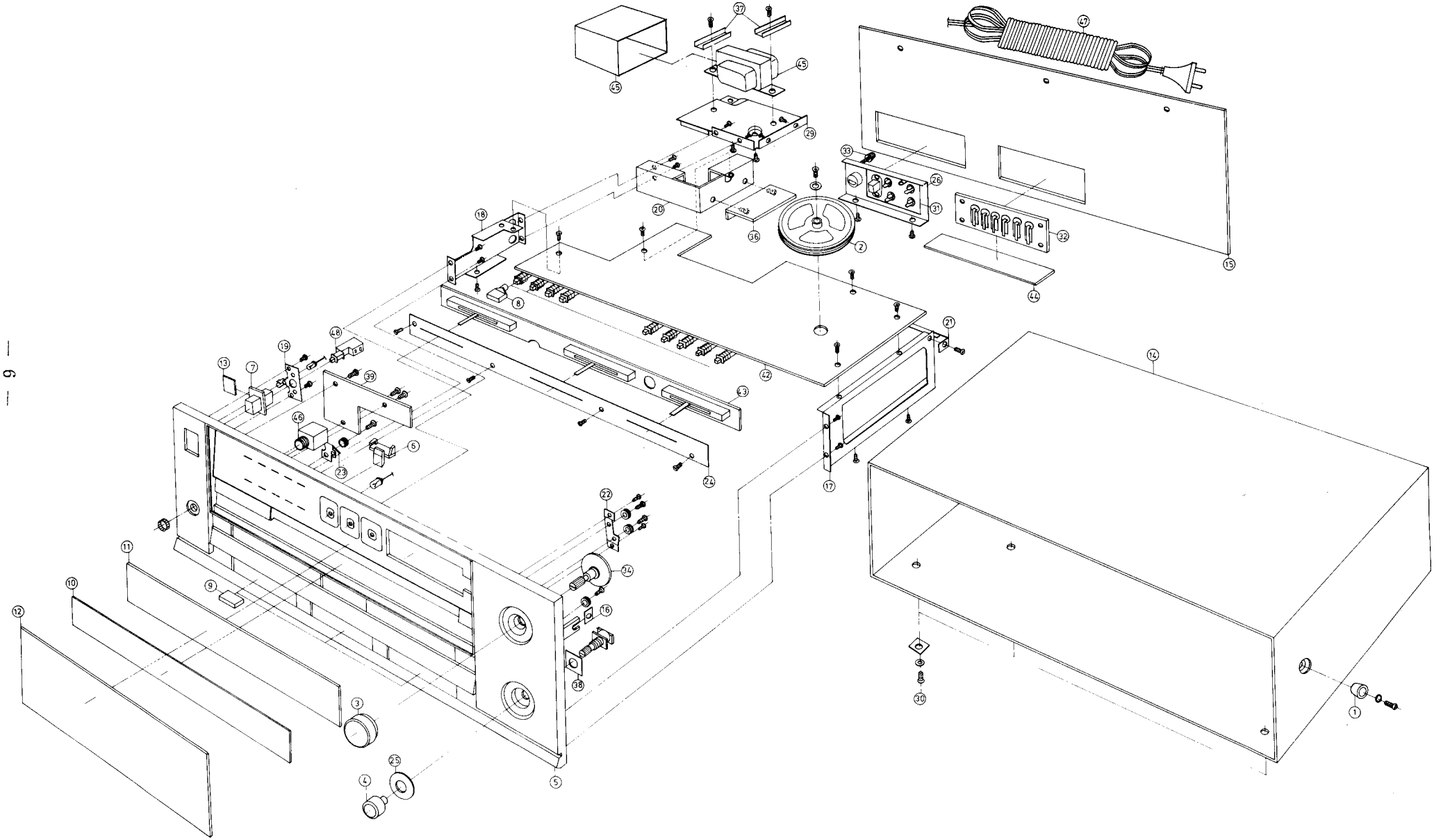
SCHEMATIC DIAGRAM



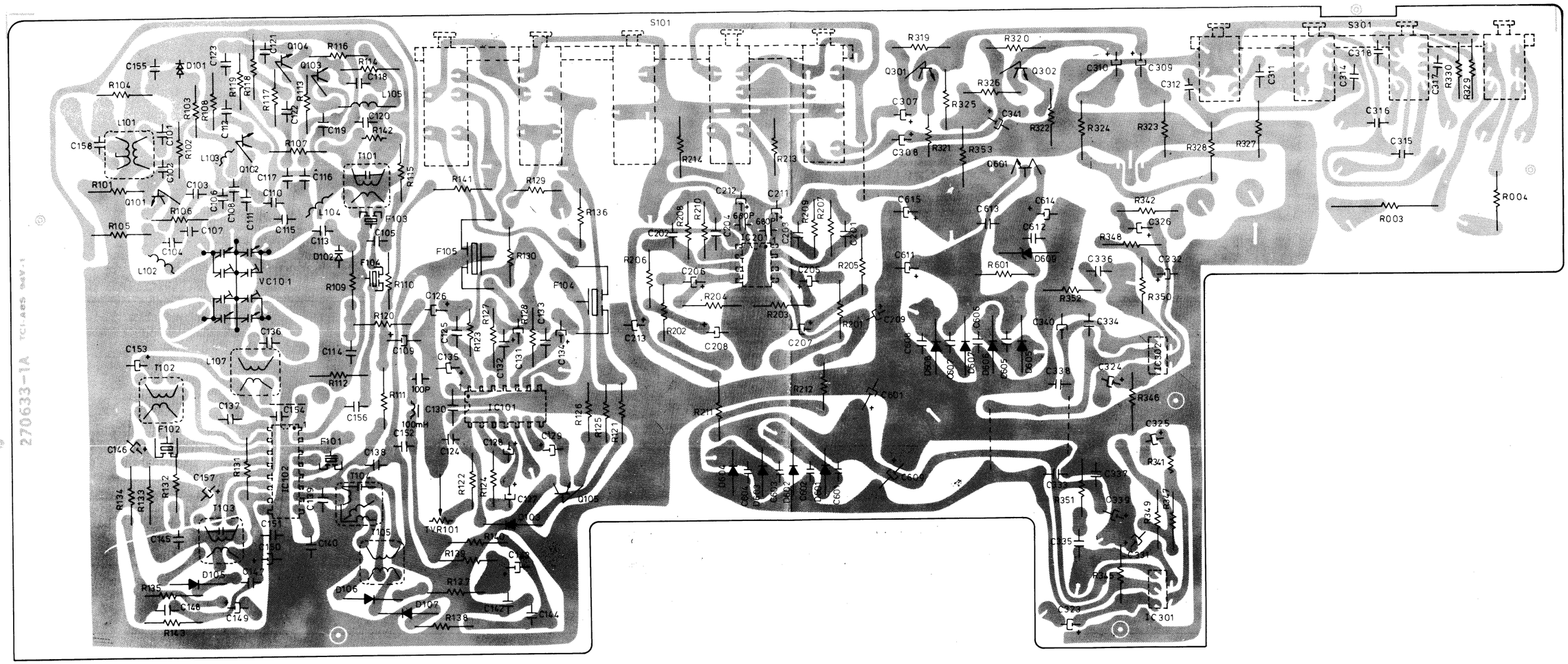
BLOCK DIAGRAM



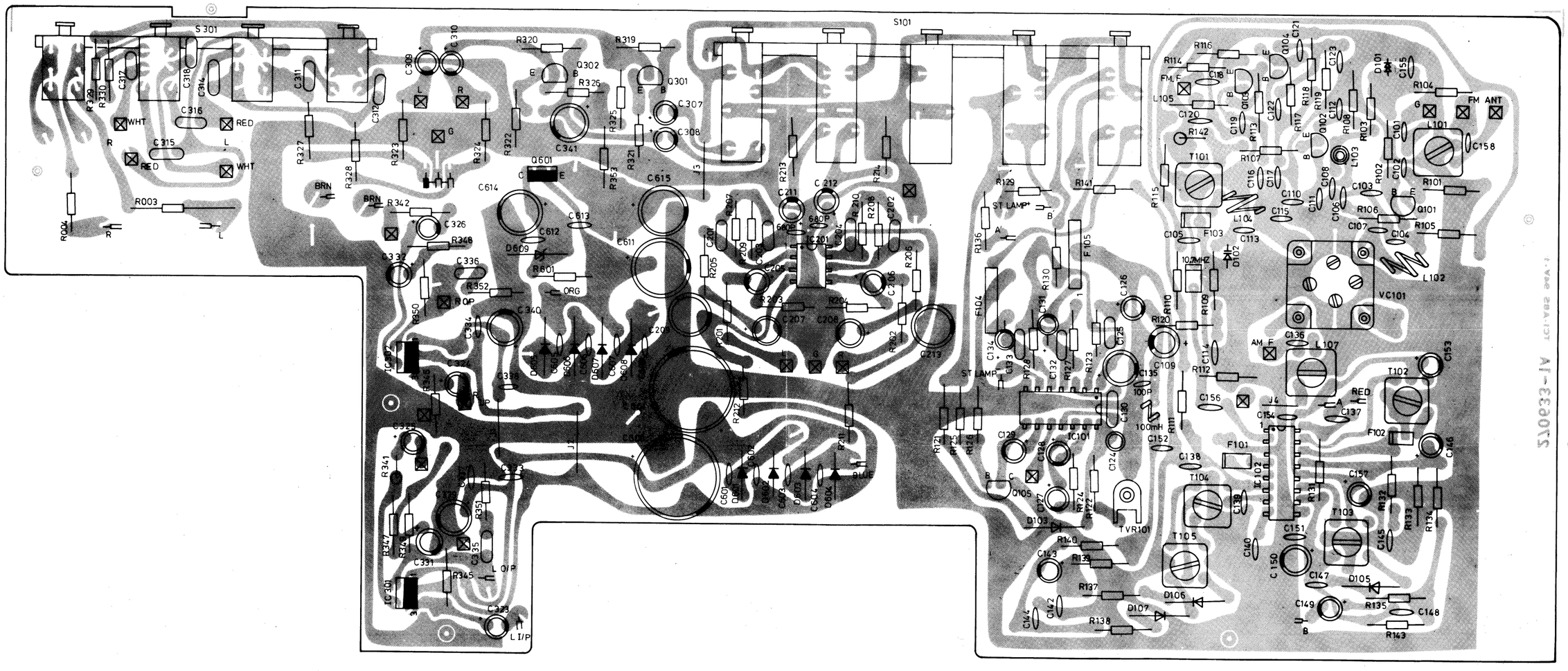
CHASSIS EXPLODED VIEW



MAIN PCB (BOTTOM VIEW)

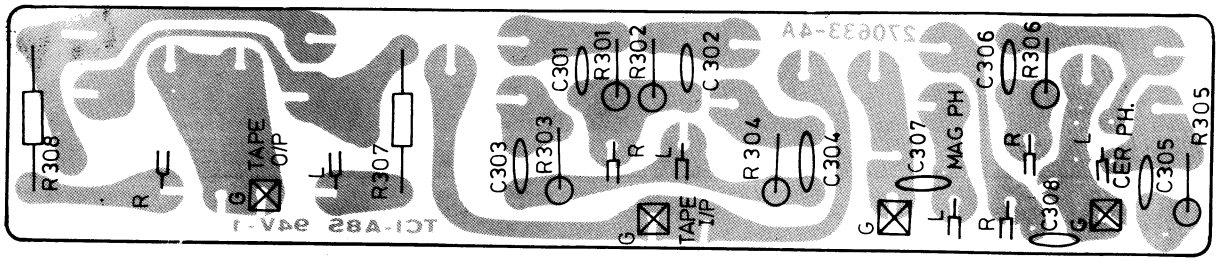


MAIN PCB (TOP VIEW)

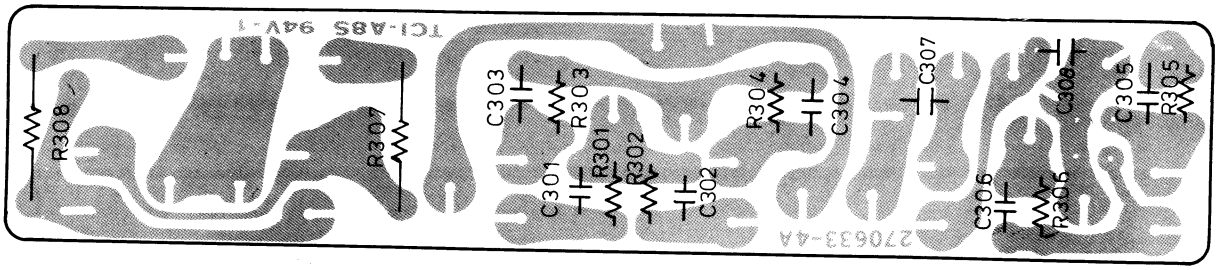


JACK BOARD P.C.B.

TOP VIEW

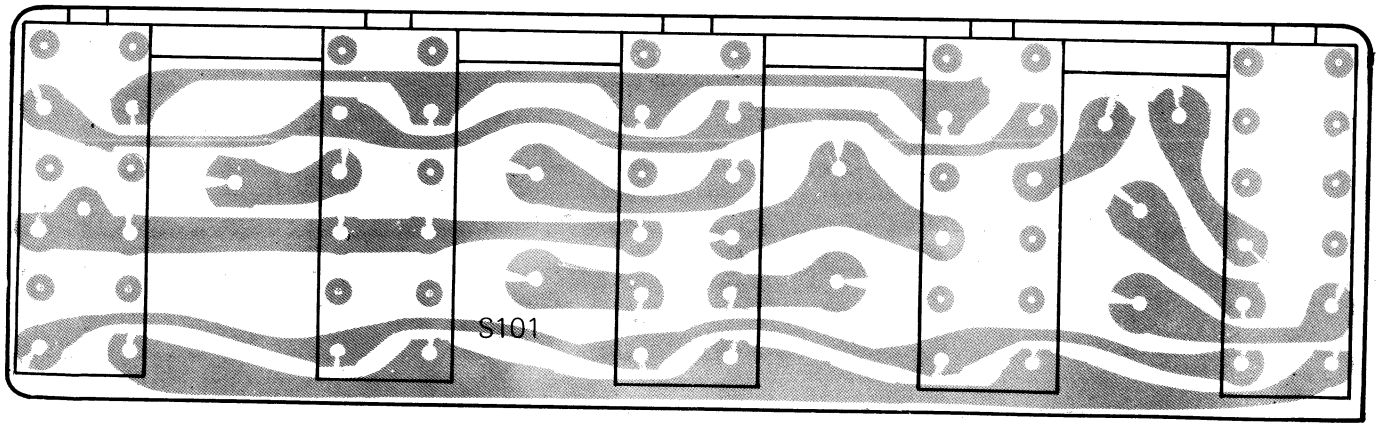


BOTTOM VIEW

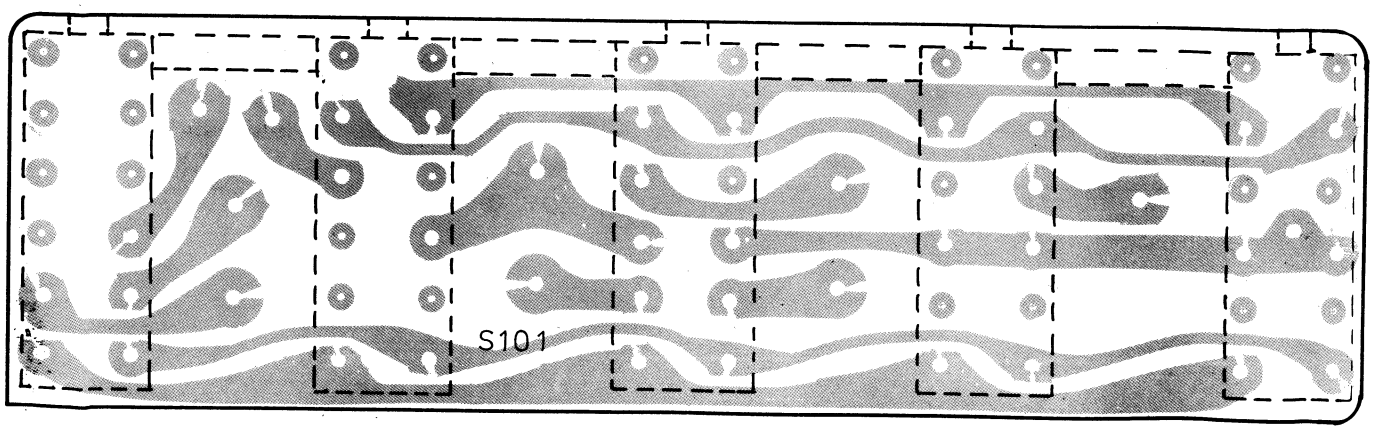


FUNCTION SWITCH CONNECTING P.C.B.

TOP VIEW

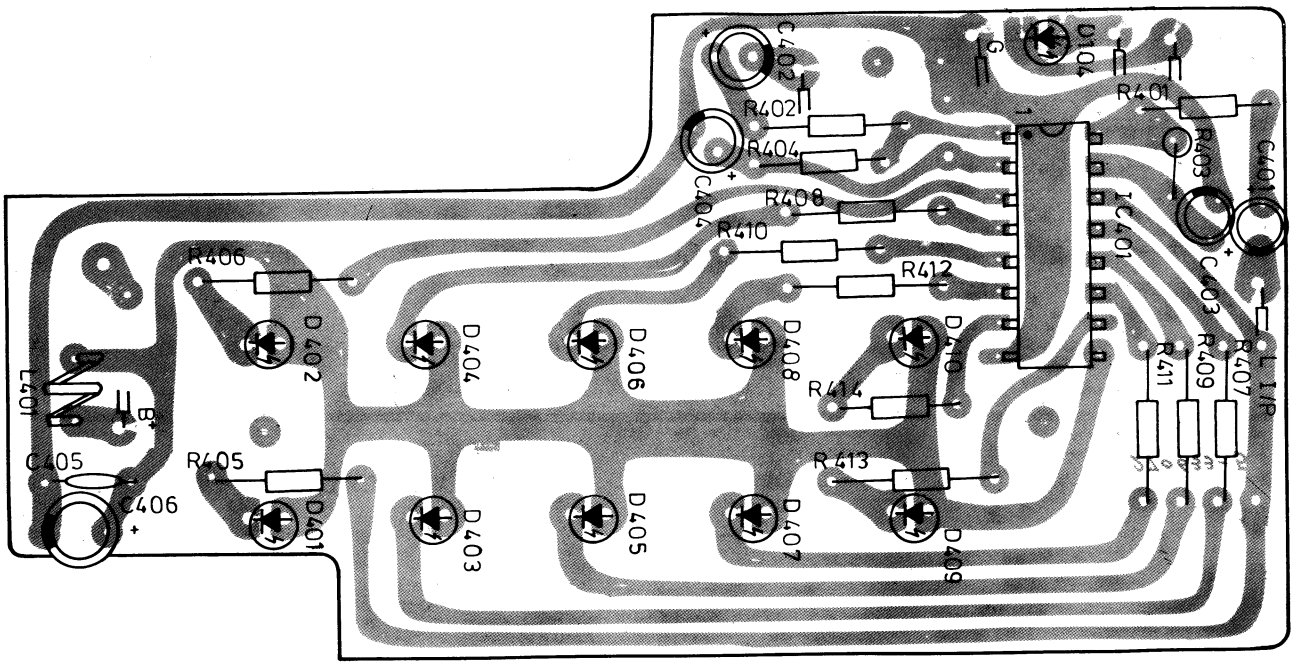


BOTTOM VIEW

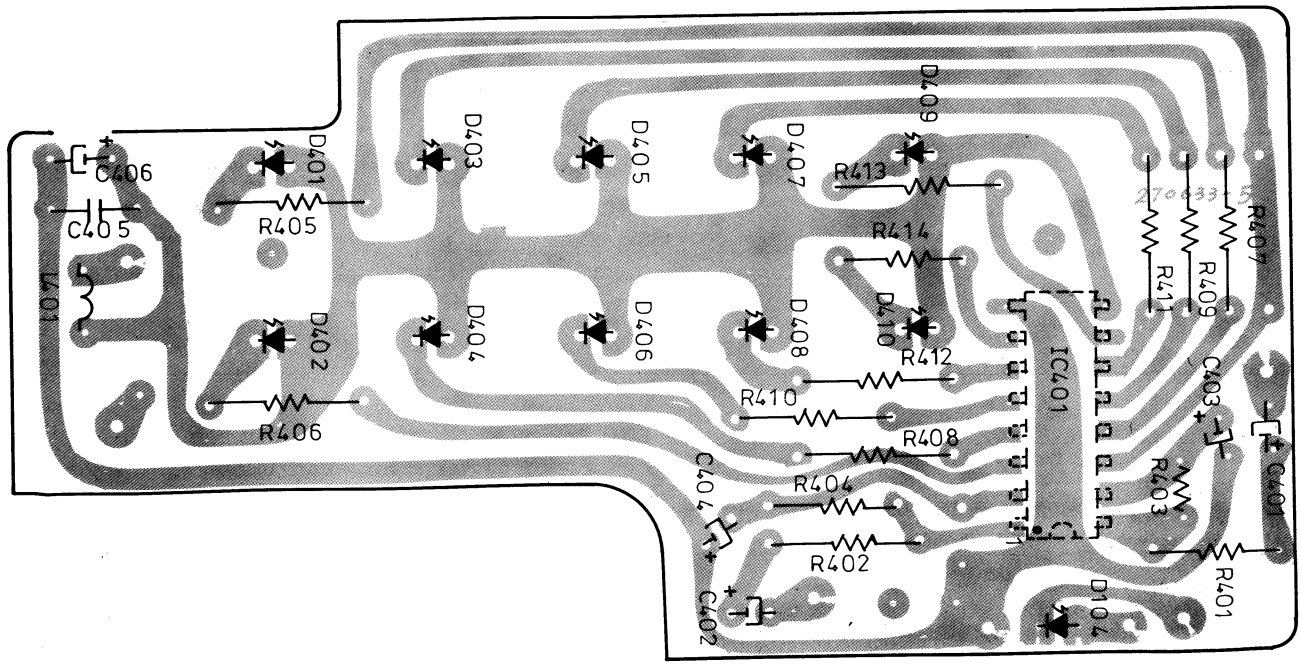


POWER INTENSITY PCB

TOP VIEW

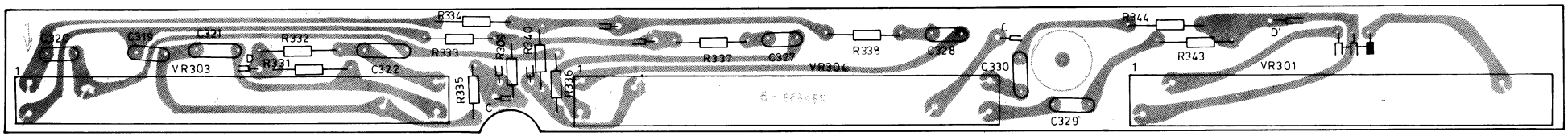


BOTTOM VIEW

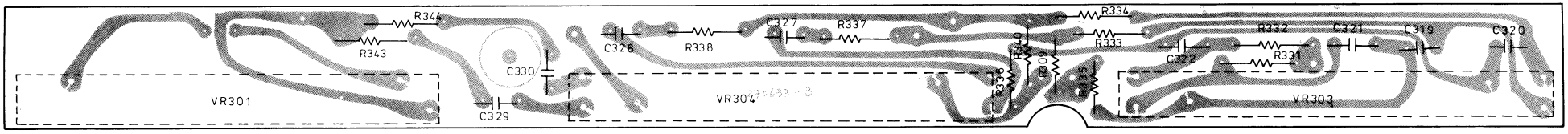


CONTROLS P.C.B.

TOP VICW



BOTTOM VIEW



ALIGNMENT PROCEDURES

Equipment

1. AM signal generator.
2. FM signal generator (VHF)
3. IF sweep gernrator (for FM)
4. Audio generator
5. MPX stereo generator
6. VTVM
7. Oscilloscope
8. Distortion meter
9. Frequency counter

General Preparation

1. Check source voltage
2. Set Function switch to Band being aligned.
3. Connect low side of signal source and output indicator to chassis ground unless otherwise pecified, Ground connection should be kept close to signal connection.
4. Signal input should be kept as low as possible to avoid AGC and Limiting action. (at alignment AM & FM).
5. Standard modulation is 1000Hz at 30% amplitude for AM, 1000Hz at 22.5KHz deviation for FM, 1000Hz at 33.75KHz (L & R) 19KHz at 6.75KHz deviation for MPX.
6. FM Ant. input impedance is 300 ohm balanced.
7. Balance, TREBLE, TONE, control all at certer.

CENTER FREQUENCY OF CERAMIC FILTER F102

COLOR MARK	CENTER FREQUENCY
Black	10.64 MHz ± 30KHz
Blue	10.67 MHz ± 30KHz
Red	10.70 MHz ± 30KHz
Orange	10.73 MHz ± 30KHz
White	10.76 MHz ± 30KHz

1. Tuner Section

(a) AM IF Alignment

Step	Connect Signal Source To-	Connect output Indicator To-	Set Signal To-	Set Tuning Dial To	Adjust-	Adjust For-
1	AM signal generator connected with std. radiation loop ant.	VTVM connected across 8 ohm resistor through Ext. Sp. jack	455 KHz (Modulated)	Tuning gang Open	T102 T103	Maximum
2	Repeat step 1 until no further increase in gain is evident.					

(b) FM IF Alignment

Step	Connect Signal Source To-	Connect Output Indicator To-	Set Signal To- Insert Markers	Set Radio Dial To-	Adjust-	Adjust For-
1	FM IF sweep generator (output) connected to TP–1 & TP–1(E) through 0.02uf ceramic capacitor	FM IF sweep generator (input) connected to TP–2 & TP–2 (E).	Sweep contered qt 10.7MHz (un-modulated) 10.6 10.7, 10.8 MHz markesr	Tuning gang open	T101	Max. gain with symmetrical curve
2					T104	
3						
4					T105	Symmetrical "S" curve
5	Repeat steps 1 through 4 until no further increase in gain is evident.					

(c) AM RF Alignment

Step	Connect Signal Source To-	Connect Output Indicator To-	Set Signal To-	Set Tuning Dial To-	Adjust	Adjust For-
1	AM signal generator. connected with std radiation loop ant.	VTVM connected. across 8 ohm resistor through Ext. SP. Jack	525 HKz (Modulated)	Minimum Frequency	L106	Max. Output
2			1650KHz (Modulated)	Maximum Frequency	VC101F (C1 on PVC)	
3			Repeat steps 1 & 2 until tuning range covers exactly from 525 KHz to 1650 KHz.			
4			600KHz (modulated)	Tune to. Signal	AM Ant Coil L107	Max. output
5			1400KHz (Modulated)	Tune to signal	VC101H (C2 on PVC)	
6			Repeat steps 4 & 5 until no further improvement is possible.			

(d) FM RF Alignment

Step	Connect Signal Source To-	Connect Output Indicator To-	Set Signal To-	Set Tuning Dial To-	Adjust	Adjust For-
1	FM signal generator connected to FM Ant terminals through 300 ohm dummy ant	VTVM connected across 8 ohm resistor through Ext SP. Jack	86.5MHz (Modulated)	Minimun Frequency	L104 (stretch or squeeze)	Max. output
2			109.5MHz (Modulated)	Maimxum Frequency	VC101D (FC1 on PVC)	
3			Repeat steps 1 & 2 until tuning range covers exactly from 87 MHz to 109 MHz.			
4			90MHz (Modulated)	Tune to signal	L102 (stretch or squeeze)	Max. output
5			106MHz (Modulated)	Tune to signal	VC101B (FC2 on PVC)	
6			Repeat steps 4 & 5 until no further gain can be obtained.			

(e) MPX. P.L.L. OSC Frequency Alignment

1. Frequency counter connected to TP–3 & TP–3(E).
2. Set function switch to FM stereo position.
3. Set tuning dial to no signal frequency.
4. Adjust TVR101 (10K ohm) for 19.0 KHz.

FREQUENCY COUNTER ALIGNMENT PROCEDURE

Step	Connect Signal Source To-	Connect Output Indicator To-	Set Signal To-	Tune Radio Near To Max. For Audio Output	Adjust-	Adjust For-
1	AM Signal Generator Connected With Std. radiation 100P ant.	VTVM Connected across 8 ohm resistor through Ext. oSo. jack	100 KHz (modulated)	100 KHz	VR 502 (10K)	Frequency display 1000 MHz
2	FM Signal generator connected to FM Ant. terminals through 300 ohm dummyant.	VTVM connected across 8 ohm resistor through Ext. Sp. jack	98 MHz (Modulated)	98 MHz	VR 501 (10K)	Frequency display 98 KHz

ELECTRICAL PARTS LIST

REF. NO.	SUPPLIER PART NO.	DESCRIPTION	Q'TY
	SEMI-CONDUCTORS & DIODES		
Q101-104	2SC1675L	FM RF, FM Conv Buffer	4
Q105	2SC945P	Switch	1
Q301,302	2SC945L-K	AF AMP	2
Q601	2SD325EF	Regulator	1
D601-608	IN4002	Rectifier	8
D609	RD11EB	Zener Diode 12V	1
D104,401 -404	LT-3211	LED RED	5
D405-410	BG-5531K	LED GREEN	6
D106,107	1N60P	FM Detector	2
D105	1N60	AM Detector	1
D101	VD1220	Bias	1
D102	SD116	FM, A.F.C.	1
D103,105	1N4148	Switching	2
D609	BZX79C11V	Zener Diode 11V	1
IC101	μPC1026C	P.L.L. M.P.X. IC	1
IC102	μPC1018C	AM-FM IF IC	1
IC201	LA6458DS	MAG Phono Preamp IC	1
IC301,302	TDA2030A	Power Output IC	2
IC401	TA7666P	Led Driver IC	1
	COILS AND TRANSFORMERS		
L101	240028-0001	FM ANT Coil	1
L102	240029-0001	FM RF Coil	1
L103	240058-0001	FM Trap Coil	1
L104	240029-0002	FM OSC Coil	1
L106	240293-0001	AM OSC Coil	1
L105	240218-0001	Choke Coil 2.2MH	1
L503	240227-0001	Choke Coil 24MH	1
L401	240233-0001	Choke Coil 5.6MH	1
L107	240342-0501	AM ANT Coil Ass'y	1
T101	230023-0001	FM 1FT (Orange) 1St	1
T104	230053-0003	FM 1FT (Pink) Det Pri	1
T105	230053-0004	FM IFT (Blue) Det Sec	1
T102	230101-0001	AM IFT (White) 1st	1
T103	230011-0003	AM IFT (Black) 2nd	1
T001	220165-0501	Power Transformer	1
F101,103	SFE10.7MA5	FM IF Ceramic Filter	2
F102	SFU455B	AM IF Ceramic Filter	1
F104,105	B3BN4103-32	Notch Filter	2
	CAPACITORS All Capacitors are ceramic, 50WV Unless Otherwise Indicated		
C136	1PF		1
C110	2PF		1
C116,106	4PF		2
C101	7PF		1
C117,158	8PF		2

REF. NO.	SUPPLIER PART NO.	DESCRIPTION	Q'TY
C118		6PF	1
C122,115		15PF	2
C102,107 123		18PF	3
C111,301-306		25PF	7
C152,507		100PF	2
C142,144 342		220PF	3
C108		330PF	1
C103		.005 μF	1
C119,156 148,137		.01μF	4
C104,105, 109,112, 120,121, 138,139, 140,141, 145,147, 151,601-608,612, 613		.02μF	23
C114,154, 155		.04μF	3
C33,334, 337,338,		.1μF	4
C301-304		56PF	4
C132,133		.001μF	2
C113		5PF	1
C136		3PF	1
C124		470PF	1
C125,201, 202,311, 312		.0022μF Mylar	5
C315,316, 327,328		.0039μF Mylar	4
C313,314		.018μF Mylar	2
C130		.047μF Mylar	1
C203,204		.0082 Mylar	2
C317,318		.12μF Mylar	2
C319,320		.015μF Mylar	2
C329,330, 335,336,		.027μF Mylar	4
C321,322,		.1μF Mylar	2
C128,129, 149		.22μF/50V Elec.	3
C127,403, 404		.47μF/50V Elec.	3

REF. NO.	SUPPLIER PART NO.	DESCRIPTION	Q'TY
C323,324, 307-310, 134,157, 131		1μF/50V Elec.	9
C211,212, 126		2.2μF/50V Elec.	3
C148,143, 406		4.7μF/50V Elec.	3
C153,325 326		10μF/25V Elec.	3
C205,206		22μF/16V Elec.	2
C146,150, 207,208, 332,331		47μF/16V Elec.	6
C209,213, 339,340		100μF/25V Elec.	4
C341		220μF/16V Elec.	1
C135,615		470μF/16V Elec.	2
C611,614		1000μF/16V Elec.	2
C609,610		2200μF/25V Elec.	2
C153		10μF/16V Elec.	1
C109		100μF/16V Elec.	1
C124		470PF Poly.	1
RESISTORS All Resistors are carbon Film ±5% ¼ Watt Unless Otherwise Indicated			
R003,004		8ohm 3 Watt	2
R351,352		1ohm ½ watt	2
R106		10 ohm	1
R110		47 ohm	1
R107,141, 116,501		100 ohm	4
R130		120 ohm	1
R115		150 ohm	1
R347,348, 104,114,		330 ohm	4
R112,135, 409-414		470 ohm	8
R136		560 ohm	1
R101,105, 108,124 129,137, 138,211, 114 405-408		1K ohm	13
R321,322		1.2K ohm	2
R119		1.8K ohm	1
R132,205,		2.2K ohm	7

REF. NO.	SUPPLIER PART NO.	DESCRIPTION	Q'TY
206,307, 305,331, 335		2.2K ohm	
R329,330,		3.3K ohm	2
R127,128, 325,326		3.9K ohm	4
R102,103, 139,140, 337,338, 201,202		4.7K ohm	8
R327,328		6.8K ohm	2
R341,342		8.2K ohm	2
R117,121, 118,134, 213,214, 143		10K ohm	7
R123,126		12K ohm	2
R122,142, 323,324,		15K ohm	4
R131,345, 346,349, 350		22K ohm	5
R207,208		39K ohm	2
R133		47K ohm	1
R203,204		56K ohm	2
R125,404		100K ohm	2
R109		150K ohm	1
R209,210, 508		390K ohm	3
R301-306, 120		680K ohm	7
R113		820K ohm	1
R319,320		1M ohm	2
R335,336, 353,601, 611		220 ohm	5
R343,344		680 ohm	2
R403,404		2.7K ohm	2
R333,334		18 ohm	2
R339,340		82K ohm	2
R006,005		4.7Mohm ½ watt	2
R001,002		220 ohm ½ watt	2
TVR101, VR501 VR502	630013-0023	Semi-Fixed VR 8φ 10K "B"	3
VR301	630240-0001	BALANCE Control 100KW/CENT Lock	1
VR304,303	630241-0001	Bass/Treble Control	2

REF. NO.	SUPPLIER PART NO.	DESCRIPTION	Q'TY
VR320	630239-0001	100KC/Cent Lock 50KB W/Tap Volume Control	1
		MISCELLANEOUS COMPONENTS	
S001	720240-0001	Power Switch	1
S101	720271-0001	Push Switch Function	1
S301	720270-0001	Push Switch HI/LO Filter Loudness, Speaker	1
DS601	640004-0026	Lamp 12V 50MA (Vio, Blu) Phono	1
DS602	640004-0027	Lamp 12V 50MA (Vio, Gry) Tape	1
DS603	640004-0028	Lamp 12V 50MA (Vio. Wht) Tuner	1
DS604	640004-0032	Lamp 12V 60MA (GRN) Power Switch	1
DS605	640004-0033	Lamp 12V 60MA (GRN) Pointer	1
VC101	610027-0003	PVC	1
J001	670003-0001	Headphone Jack	1
	640006-0016	Fuse 0.5A 250V	1
	640006-0031	Fuse 1.25A 250V	1

CHASSIS PARTS LIST

REF. NO.	MFR'S PART NO.	DESCRIPTION	Q'TY
1	211025-0001A	FASTENING BUSHING	2
2	211099-0001	DIAL DRUM	1
3	211686-0001	TUNING KNOB	1
4	211687-0001	VOLUME KNOB	1
5	211892-0001	FRONT PANEL	1
6	211893-0001	DIAL POINTER	1
7	211894-0001	POWER KNOB	1
8	211895-0001	FUNCTION KNOB (Speaker, Loundness, Low Filter, Hi Filter, Ceramic PH/AUX, MAG, PH, TAPE, AM FM, AUTO	9
9	211896-0001	SLIDE KNOB (Bass,Treble,Balance)	3
10	211897-0001	DIAL SCALE	1
11	211898-0001	DECORATION PLATE	1
12	211899-7001	DIAL WINDOW	1
13	211904-0001	ACRYLIC SHEET FOR POWER KNOB	1
14	250136-0001	WOOD CABINET	1
15	250137-0001	BACK BOARD	1
16	313213-0001	CHASSIS NUT FOR FRONT PANEL	2
17	*	MAIN PCB BRKT (A)	1
18	*	MAIN PCB BRKT (B)	1
19	*	POWER SW BRKT	1
20	*	HEAT SINK	1
21	*	MAIN PCB HOLDER	1
22	*	PULLEY HOLDER (A)	1
23	*	PULLEY HOLDER (B)	1
24	*	SLIDE VR HOLDER	1
25	*	VOLUME DECORATION PLATE	1
26	*	TERMINAL BOARD (A) BRKT	1
29	*	TRANSFORMER BRKT	1
30	350223-0001	CABINET SCREW ASSY	7
31	350232-0001	TERMINAL BOARD ASSY (A)	1
32	350233-0001	TERMINAL BOARD ASSY (B)	1
33	350234-0001	GROUND SCREW	1
34	350237-0001	TUNING SHAFT ASSY	1
36	313454-0001	HEAT SINK PLATE	1
37		TRANS MOUNTING WASHER	2
38	313451-0001	EARTH PLATE	1
39	DB5180 PIPA	POWER IND PCB ASSEMBLY	1
42	270633-0001 *	MAIN PCB ASSEMBLY	1
43	DB5180TCPA	TONE CONTROL PCB ASSEMBLY	1
44	DB5180JPA	JACK PCB ASSEMBLY	1
45	220165-0501	POWER TRANSFORMER	1
46	670003-0001	HEADPHONE JACK	1
47	710032-0009	AC CORD	1

REF. NO	MFR'S PART NO.	DESCRIPTION	Q'TY
48	720240-0001	POWER SWITCH	1
48	720240-0001	POWER SWITCH	1
	210080-0001	GUIDE PULLEY	3
	210080-0002	GUIDE PULLEY	1
	211332-0001	BAR ANTENNA HOLDER	2
	310565-0002	DIAL SPRING	1
	311013-0008	GUIDE PULLEY SCREW	3
	677013-0001	AC OUTLET	1
	270633-0002	SWITCH PCB	1
	330069-0002	FUSE HOLDER	2
	2605770001	SHIELD PAPER	1